

UK Patent Application (19) GB (11) 2019 821 A

(21) Application No 7848020
(22) Date of filing 11 Dec 1978

(23) Claims filed 11 Dec 1978

(30) Priority data

(31) 3411

(32) 28 Apr 1978

(33) Italy (IT)

(43) Application published
7 Nov 1979

(51) INT CL²
865G 59/06

(52) Domestic classification
B8U 306 EA
B8R 431 472

(56) Documents cited

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(58) Field of search

B8R

B8U

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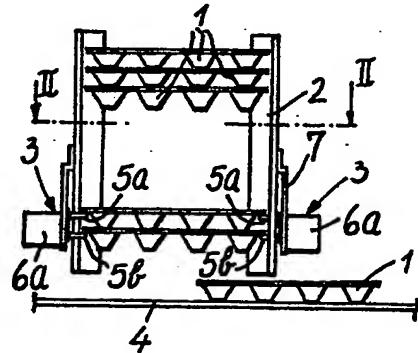
Mathisen, Macara & Co

(54) Dispensing escapement device

(57) An escapement device for the high-speed separation of piled blister panels (1) comprises a magazine (2) in which the panels are piled, a plurality of supporting needle-shaped upper and lower rests (5a, 5b) at the bottom

of the magazine (2) moved by a drive (6a, 6b) between panel support position in which each panel is supported by the upper rests (5a) and a panel releasing position in which each panel is supported by the lower rests (5b) for the discharging onto a removing belt (4).

Fig. 1



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Fig. 1

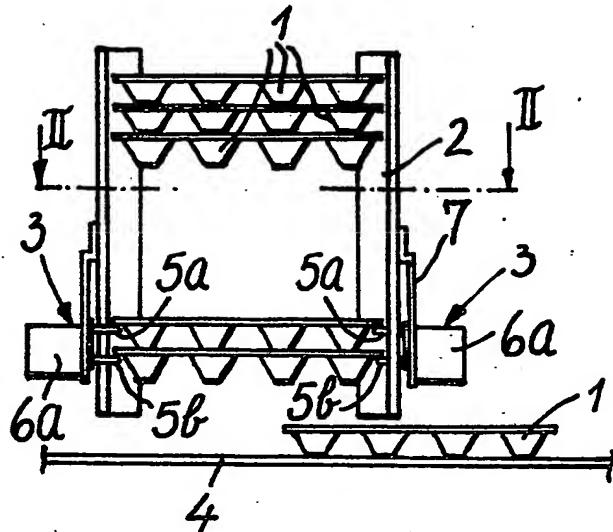


Fig. 2

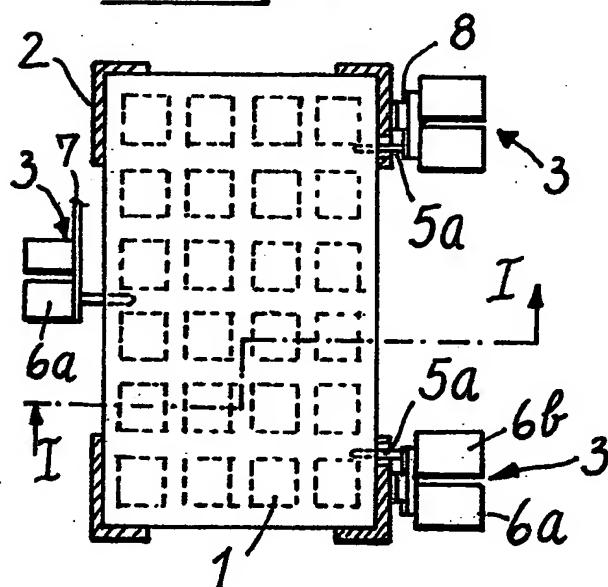


Fig. 3

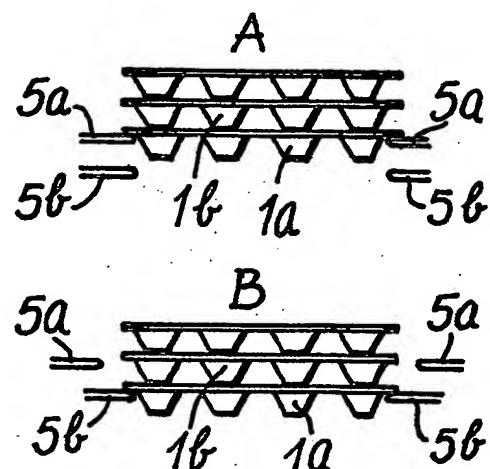


Diagram of a bridge deck structure labeled 'C' with supports '5a' and '5b'.

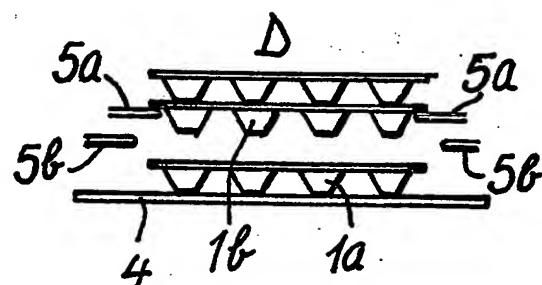
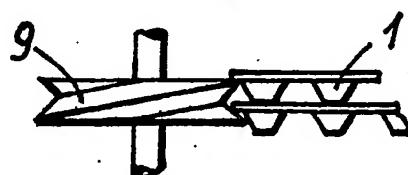


Fig. 4



SPECIFICATION**Escapement device for the individual high-speed separation of panels of blister or strip type and similar products, piled in a magazine**

5 This invention relates to an escapement device for the individual high-speed separation of panels of blister or strip type and similar products, piled in a magazine. Tablets, pills and the like, especially of pharmaceutical type, are sold commercially in 10 packages known as blisters or strips. The former consists of a plastic sheet in which seats for the tablets are formed in a uniform arrangement and are closed by aluminium foil. Strips, on the other hand, are formed from two aluminium foils 15 disposed one on the other, with the tablets encapsulated between them. These packages are then cut to form panels for insertion in a predetermined number in boxes. At the present time, these panels are piled in a vertical magazine, 20 and are fed to packaging machines by a belt provided with separating rods and/or pushers which withdraw a certain number of panels from the magazine. Known withdrawal devices have serious drawbacks, of which an important one is 25 the withdrawal of the wrong number of panels, for example because the panels curve under the action of the weight of the pile. Moreover, it is difficult to vary the number of panels to be withdrawn by each pusher because of the 30 bouncing which occurs when the panels fall on to the belt, so causing loss of exact positioning.

Furthermore, known devices are not suitable for satisfying the high operating speeds of present-day packaging machines.

35 The object of the present invention is therefore to provide a device for separating individual panels and for depositing them in an ordered manner on a packaging machine feed belt.

This object is attained by an escapement 40 device, characterized in that it comprises at least three supports disposed at the bottom of the magazine and each composed of two overlying rests, the upper of which form a surface lying above and parallel to the surface formed by the 45 lower rests, said rests being moved by drive means between a panel support position and a panel release position so that in a first position the upper rests support the lower panel of the pile, in a second position the upper rests are retracted to 50 allow said panel to be deposited on the lower rests, in a third position the upper rests support the immediately overlying panel of the pile, and in a fourth position the lower rests are retracted to 55 deposit the panel supported thereon, on to means for its removal.

Further details will be more apparent from the description given hereinafter of one preferred embodiment of the device according to the invention, illustrated by way of example in the 60 accompanying drawing in which:

Figure 1 is a diagrammatic elevation on the line I—I of Figure 2;

Figure 2 is a plan view on the line II—II of

Figure 1:

65 Figure 3 shows operating sequences for the device according to the invention, and Figure 4 shows one modification of the device. With reference to Figures 1 to 3, known blister panels 1 are shown piled in a magazine 2 of 70 vertical axis, formed substantially by four angle sections disposed at the vertices of a quadrilateral having the dimensions of the panels 1 and lying above a removal belt 4.

The pile of panels 1 is supported lowerly by 75 three supports 3, each constituted by an upper rest 5a and a lower rest 5b which are spaced apart by a distance slightly less than the thickness of the panels 1. The three upper and lower rests are disposed mutually coplanar at the vertices of a 80 triangle, so that they engage under two parallel opposing edges of the panels. Each rest 5a, 5b comprises a type of needle of horizontal axis for insertion under the adjacent edge of a blister through a corresponding aperture in the magazine 85 2. The rests 5a, 5b are driven by respective electromagnets 6a, 6b fixed by brackets 7 to the magazine 2, and arranged to move the rests into engagement and disengagement with the relative panel 1. For reasons of size, because of the 90 proximity of the two rests 5a, 5b, the upper one is connected to the rod of the relative electromagnet 6a by a plate 8.

The operation of the described device is as follows. In a first position, indicated by A in Figure 95 3, the upper rests 5a of the supports 3 support the lower panel 1a of the pile contained in the magazine. In a second position B, the upper rests 5a are simultaneously retracted by activating the respective electromagnets 6a, so that the entire pile 100 is lowered onto the lower rests 5b. In a third position C, the upper rests 5a are again moved into the forward position to engage under the edges of a panel 1b lying immediately above the lower panel 1a. Finally, in a fourth position D, the 105 rests 5b are retracted by the electromagnets 6b so that the panel 1a can fall on to the removal belt 4, while the rest of the pile remains supported by the upper rests 5a. The rests 5b are again moved forward to reassume position A.

110 It should be noted that the individual panels can be separated at high speed by the described device.

The separation speed is easily adjusted by increasing or reducing the frequency of operation 115 of the electromagnets. In addition, by increasing the distance between the upper supports 5a and the lower supports 5b, the number of panels released on to the belt 4 can be varied.

In a second embodiment shown in Figure 4, 120 each support is constituted by a disc 9 provided with a screw thread along its outer periphery to form the rests for the panel. The disc is rotated to enable the panels to fall on to the belt 4 as soon as they reach the end of the thread.

The device according to the invention also enables the products unloaded on to the belt 4 to be counted.

CLAIMS

1. An escapement device for the individual high-speed separation of panels of blister or strip type and similar products, piled in a magazine.

5 characterized in that it comprises three supports disposed at the bottom of the magazine and each composed of two overlying rests, the upper of which form a surface lying above and parallel to the surface formed by the lower rests, said rests being moved by drive means between a panel support position and a panel release position so that in a first position the upper rests support the lower panel of the pile, in a second position the upper rests are retracted to allow said panel to be 10 deposited on the lower rests, in a third position the upper rests support the immediately over-lying panel of the pile, and in a fourth position the lower rests are retracted to deposit the panel supported 15

20 thereon, on to means for its removal.

2. A device as claimed in claim 1, wherein each of said rests is constituted by a sort of needle disposed with its axis horizontal and moved between the support position and the release position by an electromagnet.

25 3. A device as claimed in claim 1, wherein each of said supports is constituted by a disc provided along its outer periphery with a screw thread on which the panel edges rest, said disc being rotatable about an axis parallel to the panel pile axis.

30 4. An escapement device for the individual high-speed separation of panels of blister or strip type and similar products, piled in a magazine substantially as herein described with reference to 35 the accompanying drawings.